Earth-Based Observation of Galileo Probe for Jupiter Wind Estimation

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The Galileo probe transmitted a radio signal to the orbiter during the active life of the probe. The Jupiter wind speed can be deduced from measurements of the Doppler shift of the probe signal. Observation geometry and the accuracy of the wind speed determination is improved by combining the probe-orbiter Doppler data with probe-Earth Doppler data. The probe radio signal was recorded at two radio observatories: the Very Large Array in Socorro, New Mexico and the Australia Telescope Compact Array in Narrabri, Australia. Each observatory was operated as a combining array; multiple antennas were configured to operate as a single antenna with larger effective aperture. The probe signal has been detected in the recordings. The low received signal to noise ratio, combined with the dynamics and swinging of the probe, has made the signal extraction difficult. Preliminary data and results will be presented.

Abstract submitted for 1996 DPS meeting

Date submitted: LPI electronic form version 5/96

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Special instructions: Tue Aug 27 17:22:38 CDT 1996

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